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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

SMITH, JEFFREY S

ART UNIT	PAPER NUMBER
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2635

DATE MAILED: 11/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/679,250

Applicant(s)

BRUSS, ANDREW

Examiner

Jeffrey S. Smith

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-56 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-56 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 11/2005.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

The drawings are objected to under 37 CFR 1.83(a) because they fail to show the exemplary angiogram and the exemplary emulated angiograms as described with respect to Figures 1A, 1B, and 1C in the specification. The images received at the U.S. Patent and Trademark Office appear to be photocopies of originals that show these features. However, the photocopies as filed show dark black regions with white spots and lines, and are too unclear to read.

Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If

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the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

Claims 1-28, 31-32, and 40-56 are objected to because of the following informalities:

In claims 1, 18, and 40, "the blood vessel data" lacks antecedent basis.

In claims 3-4, 20-21, 31-32, and 42-43, "the first color table and is a monochrome color table" should be "the first color table is a monochrome color table."

In claims 17 and 56, the claim must end in a period instead of a colon.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 18, 29 and 40 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent Application Publication No. 2001/0031920 published Oct. 28, 2001 by Kaufman et al. ("Kaufman").

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For claim 1, Kaufman discloses loading three-dimensional image data representing at least a portion of a body (see step 104 of Figure 1), segmenting at least a portion of the blood vessel data from the three-dimensional data to create segmented blood vessel data and non-segmented data (see paragraph 221), maintaining values for a rendering characteristic, and rendering the non-segmented data and the blood vessel data using the values of the rendering characteristic (see paragraph 221, which states that “the techniques discussed regarding virtual biopsy can be applied in this context to evaluate vessel wall.” See paragraphs 173-174 “The above described techniques can also form the basis of a system for performing virtual electronic biopsy.... As noted above, volume rendering techniques use one or more defined transfer functions to map different ranges of sample values of the original volume data to different colors, opacities and other displayable parameters”).

Claims 18, 29 and 40, which contain similar limitations, are also rejected for these reasons.

Claims 1, 16-18, 29, 40 and 55-56 are rejected under 35 U.S.C. 102(b) as being anticipated by “A complete simulation of x-ray angiography” by Peter Hall (“Hall”) and cited in the Information Disclosure Statement.

For claims 1, 18, 29 and 40, Hall discloses loading 3-D image data, segmenting the data, and rendering blood vessels (see page 1064, “the reconstruction algorithm is premised on an ability to automatically segment places where vessels appear to branch

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or cross....” See also page 1065 “Ray-tracing may be used to render voxel data sets....

Our rendering method can be generalized to cope with general CSG models.”)

For claims 16-17 and 55-56, Hall provides an animated view of the blood vessel and non-segmented data (see pages 1068-1074, “Simulating blood flow and animation control”).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-13, 19-28, 30-39, and 41-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaufman in view of U.S. Patent Number 6,826,297 issued to Saito et al. (“Saito”).

For claim 2, Kaufman discloses the elements of parent claim 1. For claim 2, Kaufman discloses a rendering characteristic that is color (see paragraph 173 “four independent transfer functions have been used to determine different material by mapping ranges of CT density values into specified colors of red, green, blue and opacity, each in the range of 0 to 255”).

Kaufman does not explicitly disclose first and second color tables.

Saito in Figure 3 discloses first and second color tables 104.

It would have been obvious to one of ordinary skill in the art at the time of invention to provide the user settable color tables of Saito with the three dimensional angiograph of Kaufman to apply predefined object parameter sets to the voxel values of the three dimensional voxel data, thus eliminating the complicated and troublesome parameter setting process and more accurately reproducing the three dimensional image, as taught by Saito at column 3 lines 1-5.

For claim 3, Saito discloses a device to display medical images that allows a user to select the color used by the color table (See Figure 2, "color setting"). The color is included in a color table (See Figure 3 elements 104). The user can select any color using the device of Saito. Absent any critical showing of the advantages of white over any other color, choosing the color in the color table 104 to be white is obvious.

For claim 4, the color in the color table of Saito can be black.

For claims 5 and 6, both Saito (Figure 3) and Kaufman (paragraph 173) have a plurality of colors.

For claim 7, the user in Saito can select one color for one object, and the inverted color for the background object.

For claims 8-11, Saito in Figure 2 allows the user to select the amount of transparency. Absent any critical showing of choosing a transparency value to be a specific value, such as 80 percent, choosing these specific values using the device of Saito is obvious.

For claims 12-13, Saito allows a user to set a perspective view (See column 2 lines 38-40).

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Claims 19-28, 30-39, and 41-52, which contain similar limitations, are rejected for these reasons.

Claims 14-15 and 53-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaufman in view of Saito as applied to claim above, and further in view of U.S. Patent Number 6,501,848 issued to Carroll et al. ("Carroll").

For claims 14-15, Kaufman and Saito disclose the elements of parent claims 1, 12 and 13.

Kaufman and Saito do not disclose an orthographic view of the right anterior oblique.

Carroll discloses an orthographic view of the right anterior oblique (see column 7 lines 1-10).

It would have been obvious to one of ordinary skill in the art at the time of invention to include the right anterior oblique view of Carroll with the displays of Kaufman and Saito, to minimize image point errors and vector point errors, as taught by Carroll at column 3 lines 42-52.

Claims 53-54, which recite similar limitations, are rejected for these reasons.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey S. Smith whose telephone number is 571 270-1235. The examiner can normally be reached on M-F.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marvin Lateef can be reached on 571 270-1245. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JSS
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November 21, 2006


MARVIN LATEEF
SUPERVISORY PATENT EXAMINER